

REMARKS

Claims 1-4, 10 and 14-16 are pending in this application. By this Amendment, claim 1 is amended and claims 5-9, 11-13, 17 and 18 are canceled. Support for amended claim 1 can be found, for example, at page 9, lines 16-18, page 10, lines 3-7 and 14-18, and page 11, lines 11-14 of the originally filed specification. No new matter is added.

Entry of the amendments is proper under 37 C.F.R. §1.116 since the amendments: (a) place the application in condition for allowance for the reasons discussed herein; (b) do not raise any new issue requiring further search and/or consideration since the amendments amplify issues previously discussed throughout prosecution; (c) do not present any additional claims without canceling a corresponding number of finally rejected claims; and (d) place the application in better form for appeal, should an appeal be necessary. The amendments are necessary and were not earlier presented because they are made in response to arguments raised in the Final Rejection. Entry of the amendments is thus respectfully requested.

In view of the foregoing amendments and the following remarks, reconsideration and allowance are respectfully requested.

I. Claim Rejections Under 35 U.S.C. §102 and §103

A. AAPA

Claims 1-4, 10 and 14-16 are rejected under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Applicants' Admitted Prior Art (hereinafter "AAPA"). Applicants respectfully traverse the rejection.

First, as amended, claim 1 is directed to "[a] positive electrode material powder for a lithium secondary battery containing a Li-Ni-Co-Ba-O system component as a main component, wherein each particle which constitutes the powder has an amorphous phase of an oxide; wherein the amount of Ba in the system component is 0.0005 to 0.01 mol ratio; and

wherein the amorphous phase of the oxide contains at least one element selected from the group consisting of Na, K, Si, P and Al."

In the references described in the present disclosure, Japanese Patent Application Publication No. 9-17430 (JP 9-17430) and Japanese Patent Application Publication No. 10-79250 (JP 10-79250) disclosed the range of Ba to be less than or equal to 0.1 mol ratio. Further, Japanese Patent Application No. 2001-173285 (JP '285) discloses Ba less than or equal to 0.02 mol ratio. On the other hand, as amended, claim 1 is directed to a positive electrode material powder for a lithium secondary battery wherein the amount of Ba in the system component is 0.0005 to 0.01 mol ratio. Thus, the claimed range is substantially lower than the ranges disclosed in the AAPA.

Comparative Example 1, shown in Table 2 of the specification, corresponds to a composition disclosed in JP '285 having a Ba mol ratio of 0.001. As shown in Table 2, the results of testing a battery as a product of Comparative Example 1 are inferior to the products of the claimed invention. See specification at page 20, Table 2, Example 1 and Comparative Example 1.

Lithium secondary batteries are widely used as a power source for portable devices. The primary reason for such widespread use is that the capacity of the lithium secondary battery is larger than those of other types of secondary batteries. The larger the capacity of a battery is, the smaller and lighter the device containing the battery can be.

Any of "1st discharge capacity," "1st charge/discharge efficiency," "Rate performance," and "Cycle performance" shown in Table 2 is a property showing a battery capacity. The "1st discharge capacity/" and the "1st charge/discharge efficiency" indicate a battery capacity at the time when use of the battery begins. The "Rate performance" indicates a battery capacity when the current value in use is made large. The "Cycle performance" indicates a battery capacity when the battery is used for a long time. The four capacity properties shown in

Table 2 are the most important properties of a lithium-ion battery. Of course, since devices containing the battery are used by general customers, the result obtained by the "nail penetration test" indicating safety of the battery is also an important property. The compositions disclosed in JP '285 correspond to Comparative Examples 1 and 3 shown in Table 2. Comparative Example 1 can pass the penetration test, but it is inferior to the examples of the present invention shown in Table 2 in terms of all the items indicating capacity properties. Further, Comparative Example 3 is an example in which a larger amount of Ba than the Ba range of the present invention is added (Ba: 0.02 mol ratio). As compared to examples of the claimed invention, Comparative Example 3 shows extremely poor properties in capacity and has failed to pass the nail penetration test.

Furthermore, Comparative Example 3 shown in Table 2 of the present specification also corresponds to a composition disclosed in JP '285, wherein the Ba mol ratio is 0.02. As shown in Table 2, the results of testing the battery as a product of Comparative Example 3 are inferior to the products of the claimed invention. See specification at page 20, Table 2.

Thus, the present specification shows that the products of JP '285 are inferior to the products of the claimed invention. As described in the present specification, the claimed invention is superior to the AAPA, and thus, would not have been rendered obvious by JP '285. Thus, the claimed invention would not have been anticipated nor rendered obvious by any of the AAPA.

Second, as amended, claim 1 is directed to "[a] positive electrode material powder for a lithium secondary battery ... wherein the amorphous phase of the oxide contains at least one element selected from the group consisting of Na, K, Si, P and Al." The AAPA does not disclose, teach or suggest a positive electrode material powder for a lithium secondary battery wherein the amorphous phase of the oxide contains at least one element selected from the group consisting of Na, K, Si, P and Al.

On the other hand, the present disclosure provides at least thirteen different examples that include at least one of these elements, and each example shows excellent battery test results. See specification at p. 20, Table 2, Examples 1-4, 7, 8, 10, 18 and 19; and p. 21, Table 3, Examples 11, 12, 14 and 16.

The Office Action asserts that the present specification discloses that Ba, among other elements, allows easy formation of the amorphous phase of the oxide and this statement is an admission of prior art. See Office Action at page 3, lines 22-23. Further, the Office Action asserts that pages 4-6 of the present specification are admissions of prior art. However, what is described in the specification at page 4, last paragraph, is neither the description of prior art, nor common knowledge. Rather, the description is of a preferred embodiment of the claimed invention. In other words, the last paragraph on page 4 of the specification teaches that at least one element selected from the group consisting of Na, K, Si, P and Al, based on the composite oxide of the claimed invention, allows easy formation of the amorphous phase of the oxide and that these elements each provide an excellent positive electrode material powder for a secondary battery. In other words, these elements provide excellent battery-test results. Thus, this is not an admission of prior art, but is the result of the Applicants' research, which resulted in an embodiment of the claimed invention.

As the AAPA does not disclose, teach or suggest each and every feature of claim 1, claim 1 would not have been anticipated nor rendered obvious by the AAPA. Claims 2-4, 10 and 14-16 depend from claim 1, and thus, would also not have been anticipated nor rendered obvious by the AAPA. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

B. EP 0849817 and AAPA

Claims 1-4, 10 and 14-16 are rejected under 35 U.S.C. §103(a) as being unpatentable over EP 0849817 and in further view of the AAPA. Applicants respectfully traverse the rejection.

As amended, claim 1 is directed to "[a] positive electrode material powder for a lithium secondary battery...wherein the amount of Ba in the system component is 0.0005 to 0.01 mol ratio." The Office Action acknowledges that EP 0849817 does not disclose the Ba component. As described in detail above, the AAPA does not disclose, teach or suggest the claimed invention. Therefore, the AAPA does not cure the deficiencies of EP 0849817. Thus, EP 0849817 and AAPA, considered either separately or combined, fail to teach or suggest each and every feature of claim 1.

Therefore, claim 1 would not have been rendered obvious by EP 0849817 and the AAPA. Claims 2-4, 10 and 14-16 variously depend from claim 1 and, thus, also would not have been rendered obvious by EP 0849817 and the AAPA. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

C. JP 06-275277 and AAPA

Claims 1-4, 10 and 14-16 are rejected under 35 U.S.C. §103(a) as being unpatentable over JP 06-275277 and in further view of the AAPA. Applicants respectfully traverse the rejection.

As amended, claim 1 is directed to "[a] positive electrode material powder for a lithium secondary battery ... wherein the amount of Ba in the system component is 0.0005 to 0.01 mol ratio." The Office Action acknowledges that JP 06-275277 does not disclose the Ba component. As described in detail above, the AAPA does not disclose, teach or suggest the claimed invention. Therefore, the AAPA does not cure the deficiencies of JP 06-275277.

Thus, JP 06-275277 and AAPA, considered either separately or combined, fail to teach or suggest each and every feature of claim 1.

Therefore, claim 1 would not have been rendered obvious by JP 06-275277 and the AAPA. Claims 2-4, 10 and 14-16 variously depend from claim 1 and, thus, also would not have been rendered obvious by JP 06-275277 and the AAPA. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

D. Kobayashi and AAPA

Claims 1-4, 10 and 14-16 are rejected under 35 U.S.C. §103 as being unpatentable over Kobayashi et al. 2002/0055041 (Kobayashi) in further view of the AAPA. Applicants respectfully traverse the rejection.

As amended, claim 1 is directed to "[a] positive electrode material powder for a lithium secondary battery ... wherein the amount of Ba in the system component is 0.0005 to 0.01 mol ratio." The Office Action acknowledges that Kobayashi does not disclose the Ba component. As described in detail above, the AAPA does not disclose, teach or suggest the claimed invention. Therefore, the AAPA does not cure the deficiencies of Kobayashi. Thus, Kobayashi and AAPA, considered either separately or combined, fail to teach or suggest each and every feature of claim 1.

Therefore, claim 1 would not have been rendered obvious by Kobayashi and the AAPA. Claims 2-4, 10 and 14-16 variously depend from claim 1 and, thus, also would not have been rendered obvious by Kobayashi and the AAPA. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

II. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the application are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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